

Borehole

51-18-03

Log Event A

Borehole Information

Farm : <u>TX</u>	Tank : <u>TX-118</u>	Site Number : <u>299-W15-123</u>
N-Coord : <u>42,070</u>	W-Coord : <u>75,908</u>	TOC Elevation : <u>669.88</u>
Water Level, ft :	Date Drilled : <u>10/31/1970</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

This borehole was drilled in October 1970 and was completed to 100 ft with 6-in. casing. The driller's log makes no reference to perforations or grout. Therefore, it is assumed that the borehole was not perforated or grouted.

The casing thickness is assumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel casing. The concrete pad around the top of the casing is split and broken.

The zero reference for the SGLS logs is the top of the casing. The top of the casing is about 4 in. above the ground surface. During logging operations, the total depth of the borehole was found to be 79.0 ft, rather than 100 ft as reported in drilling records. No explanation for this decreased depth was found.

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>11/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>4/24/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>30.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>4/24/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>29.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>45.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>3</u>	Log Run Date : <u>4/25/1996</u>	Logging Engineer: <u>Kim Benham</u>
Start Depth, ft.: <u>79.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>44.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole Log Data Report

Page 2 of 3

Borehole

51-18-03

Log Event A

Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787

Analysis Date : 1/23/1997

Analysis Notes :

The borehole was logged in three log runs. The pre-survey and post-survey field verification spectra for all log runs met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the pre-survey field verification spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during log runs 1 and 3. The energy and peak-shape calibration from the post-survey field verification spectra were used to establish the channel-to-energy parameters used in the processing the spectra acquired during log run 2.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Depth overlaps, where data were collected at the same depth during separate logging runs, occurred at depth intervals from 29 to 30 ft and 44 to 45 ft. The concentrations of the naturally occurring radionuclides were calculated using the separate data sets at the overlapping depths. The calculated concentrations at the overlapping depths were within the statistical uncertainty of the measurements, except for the K-40 concentration at a depth of 44 ft.

Cs-137 and Co-60 were the only man-made radionuclides encountered in this borehole. Cs-137 was detected almost continuously from the ground surface to 79 ft (the bottom of the borehole). The maximum Cs-137 concentration was 362 pCi/g at 4.5 ft. Zones of special interest on the Cs-137 plot were shown from about 0.5 to 2 ft, 4 to 9 ft, 12 to 22 ft, 23 to 27 ft, 30 to 32 ft, 35 to 45 ft, 47 to 49 ft, 52 to 56 ft, 57 to 58 ft, 67 to 70 ft, and 77.5 to 79 ft (the bottom of the borehole).

Co-60 was detected almost continuously from a depth of 12 to 37 ft and 43 to 59.5 ft. The maximum Co-60 concentration was 3.2 pCi/g at 21.5 ft. Zones of special interest in the Co-60 plot were shown at depths from about 20 to 27 ft, 43 to 45 ft, 47.5 to 49 ft, and 50.5 to 58 ft.

The logs of the naturally occurring radionuclides show a pronounced increase in K-40 concentrations at a depth of about 49 ft.

The SGLS total count log plot reflects the log plots for the man-made and naturally occurring radionuclides. The total count log reflects the Cs-137 concentrations.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Report for tank TX-118.

Log Plot Notes:

Separate log plots show the man-made (Cs-137 and Co-60) and the naturally occurring radionuclides (KUT). The naturally occurring radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the minimum detection limit (MDL). The MDL of a radionuclide



Spectral Gamma-Ray Borehole
Log Data Report

Page 3 of 3

Borehole

51-18-03

Log Event A

represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes both the man-made and naturally occurring radionuclides, the total count log plot, as well as the Tank Farm gross-gamma log. The Tank Farm gross-gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma log plot to coincide with the SGLS data.